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Federal Communications Commission
Office of the Secretary

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of the Petition of	)	
Free Press et al.	)	
for Declaratory Ruling that Degrading an Internet Application Violates the FCC's Internet Policy Statement and Does Not Meet an Exception for "Reasonable Network Management"	)	RM- _____
Appropriate Framework for Broadband Access to the Internet over Wireline Facilities	)	CC Docket No. 02-33
Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services	)	CC Docket No. 01-337
Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements	)	CC Docket Nos. 95-20, 98-10
Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities	)	GN Docket No. 00-185
Internet Over Cable Declaratory Ruling	)	CS Docket No. 02-52
Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities	)	WC Docket No. 07-52
Broadband Industry Practices	)	

PETITION FOR DECLARATORY RULING

Of

Free Press; Public Knowledge; Media Access Project, Consumer Federation of America; Consumers Union; Information Society Project at Yale Law School; Professor Charles Nesson, Faculty Co-Director, Berkman Center for Internet & Society, Harvard Law School; Professor Barbara van Schewick, Center for Internet & Society, Stanford Law School

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Summary

This petition asks the FCC to clarify that an Internet service provider violates the FCC's Internet Policy Statement when it intentionally degrades a targeted Internet application. Specifically, the Policy Statement's exception, listed in a footnote, for "reasonable network management" does not cover this conduct. If it did, the Policy Statement would mean nothing. Moreover, the petition asks the Commission to declare that intentionally degrading applications without informing Internet users constitutes a deceptive practice.

In 2005, when the FCC adopted an order reclassifying wireline broadband as an information service, it sought to ensure that network providers of Internet service, like phone and cable companies, would not violate network neutrality. The FCC unanimously adopted an Internet Policy Statement enumerating certain consumer entitlements. Consumers are entitled to access all applications, services, and content of the consumer's choice, and entitled to competition among providers of networks, applications, services, and content. A footnote acknowledges that network providers can engage in "reasonable network management." In the order itself, the Commission stated it would enforce the principles: if "we see evidence that providers of telecommunications for Internet access or IP-enabled services are violating these principles, we will not hesitate to take action to address that conduct."

Nonetheless, a few months later, executives at phone and cable companies started declaring they would hinder consumers' ability to access Internet applications, services, and content by discriminating among them and "prioritizing" some traffic while delaying other traffic. As a result, since early 2006, Congress and the FCC have debated whether legislation or regulation is necessary to ensure network neutrality. The technology industry, small and large businesses, every major consumer group, several religious organizations, and millions of

Americans have called for network neutrality. The paradigmatic fear of network neutrality defenders was that network providers who competed (or sought to compete) with independent applications would secretly degrade those applications in ways prompting consumers to abandon those degraded applications, undermining consumer choice, innovation, and a competitive market. The primary argument of network neutrality opponents—primarily phone and cable companies—was that network neutrality advocates were being alarmist. Because phone and cable companies had not yet discriminated among content and applications, they argued, network neutrality regulation was a solution in search of problem. The FCC Chairman repeatedly vowed to enforce the FCC's Internet Policy Statement, should violations occur, and suggested additional legislation was unnecessary.

On October 19, 2007, the Associated Press and other sources reported that the number two provider of high-speed Internet access, Comcast, was engaging in the paradigmatic network neutrality violation. Comcast had been intentionally degrading lawful peer-to-peer traffic while repeatedly denying accusations that it was engaging in this practice. Peer-to-peer applications, notably BitTorrent, which Comcast degrades, are emerging as the primary means for content-providers to distribute legal movies and other video programs, while Comcast has an economic incentive to undermine competitors to its cable video-programming distribution. Caught red-handed and facing massive public outrage, Comcast and its spokespersons suggested that its practice of degrading an application's performance—using technology similar the censorship systems used by the Chinese government—somehow constitutes "reasonable network management." Meanwhile, the Petitioners reject this bogus reading of the FCC's Internet Policy Statement.

The FCC must act now to resolve this controversy. If the FCC does not immediately condemn such actions, Comcast will continue to block or filter revolutionary, socially valuable applications and content, and other broadband service providers may follow suit. Indeed, because Comcast claims its actions meet the terms of the FCC's Internet Policy Statement, even those broadband service providers now subject to the Policy Statement under merger agreements—namely, AT&T and Verizon—may be emboldened to engage in such activity.

Specifically, the FCC must act now to clarify that intentionally degrading an application or class of applications is not "reasonable network management" under the FCC Policy Statement. If degrading applications was "reasonable network management," the Policy would mean nothing. Indeed, no plausible technical or economic reason suggests that blocking particular applications is a reasonable way to manage a network, especially because network providers have numerous nondiscriminatory methods to manage their networks. Since degrading an application does not fit within the reasonable-network-management exception, engaging in this practice clearly violates the Policy Statement. Indeed, it violates three of the Statement's four principles: it wrongfully denies consumers the ability "to run applications and use services of their choice"; to "access any lawful content"; and to have access to "competition among access providers, service providers, and content providers." The FCC should resolve any ambiguity and declare that intentionally degrading an application violates the FCC's Policy Statement.

Moreover, the Commission should clarify that secretly degrading an Internet application, while advertising access to the Internet and not prominently notifying consumers, constitutes a deceptive practice.

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PETITION FOR DECLARATORY RULING

Free Press,[1] Public Knowledge,[2] Media Access Project,[3] Consumer Federation of America;[4] Consumers Union;[5] Information Society Project at Yale Law School;[6] Charles Nesson, Faculty Co-Director of the Berkman Center for Internet & Society, Harvard Law School;[7] and Barbara van Schewick, Professor at Stanford Law School and Fellow, Center for Internet & Society;[8] ("Free Press et al.") petition the Commission to terminate the apparent

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[1] Free Press is national, nonpartisan, nonprofit organization. Through education, organizing, and advocacy, Free Press works to increase informed public participation in crucial media policy debates. Free Press and its members have been involved on a wide range of media policy debates and have played a lead role on network neutrality debates, including acting as the Coordinator of the SavetheInternet.com Coalition, which advocates for network neutrality. This Coalition includes hundreds of nonprofit organizations, small businesses, church affiliations, educational institutions and scholars, video gaming groups, bloggers, and other organizations. Free Press, along with Public Knowledge, has filed a formal FCC complaint against Comcast regarding its secret discrimination against peer-to-peer applications.

[2] Public Knowledge is a Washington, DC based public interest group working to defend citizens' rights in the emerging digital culture.

[3] Media Access Project is a thirty five year old non-profit tax exempt public interest media and telecommunications law firm which promotes the public's First Amendment right to hear and be heard on the electronic media of today and tomorrow.

[4] Consumer Federation of America is an advocacy, research, education, and service organization. As an advocacy group, it works to advance pro-consumer policy on a variety of issues before Congress, the White House, federal and state regulatory agencies, state legislatures, and the courts. Founded in 1968, its membership includes some 300 nonprofit organizations from throughout the nation with a combined membership exceeding 50 million people.

[5] Founded in 1936, Consumers Union is an expert, independent, nonprofit organization, whose mission is to work for a fair, just, and safe marketplace for all consumers. CU publishes Consumer Reports and ConsumerReports.org in addition to two newsletters, with combined subscriptions of more than 7 million. Consumers Union also has more than 500,000 online activists and several public education Web sites.

[6] The Information Society Project at Yale Law School is an intellectual center founded in 1997 to study the implications of the Internet, telecommunications, and the new information technologies on law and society. Much of the center's work has focused on issues of freedom of speech, democracy, and the growth and spread of cultures on the Internet.

[7] Charles Nesson is the William F. Weld Professor of Law at Harvard Law School and the Founder and Faculty Co-Director of the Berkman Center for Internet & Society, which is a research program founded to explore cyberspace, share in its study, and help pioneer its development. The Center represents a network of faculty, students, fellows, entrepreneurs, lawyers, and virtual architects working to identify and engage with the challenges and opportunities of cyberspace.

[8] Barbara van Schewick is an Assistant Professor of Law at Stanford Law School, was the first residential fellow at Stanford's Center for Internet and Society, and one of the world experts on Internet innovation and network neutrality's relation to innovation. The Center for Internet and Society is a public interest technology law and policy program at Stanford Law School that brings together scholars, academics, legislators, students, programmers, security researchers, and scientists to study the interaction of new technologies and the law and to examine how the synergy between the two can either promote or harm public goods like free speech, privacy, public commons, diversity, and scientific inquiry.

controversy and remove any ambiguity[9] that the practice by broadband service providers of degrading peer-to-peer traffic violates the FCC's Internet Policy Statement.[10] The Commission should declare that such practices do not meet the FCC's limited exception for "reasonable network management," and shall be subject to injunction and significant fines. Finally, the FCC should declare that degrading applications without informing consumers, while advertising "unlimited usage" or access to "the Internet," is deceptive.

I. Facts

The nation's number two provider of high-speed Internet (or "broadband") access, Comcast, has been secretly degrading peer-to-peer traffic despite repeated denials. Upon revelation of this discrimination and popular outrage that Comcast is violating network neutrality and consumer choice, Comcast claimed that its secret practice constitutes "reasonable network management." Comcast continues to engage in these practices, and it remains unclear to what extent other broadband service providers may engage in similar practices.

A. Network Neutrality Background

In the last fifteen years, the Internet has become one of history's greatest engines for innovation, value creation, and freedom of speech. It has done so because anyone with access has been able to offer applications or content to the public through the Internet without being subject to gatekeeper controls. For many years, legal scholars, technology companies, independent Internet service providers, FCC Commissioners, and millions of Americans have been concerned that facilities-based Internet service providers, such as phone and cable companies, would attempt to restrict consumers' unfettered and nondiscriminatory access to

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[9] *See* 5 U.S.C.A. § 554(e); 47 C.F.R. § 1.2.

[10] Federal Communications Commission, Policy Statement, Aug. 5, 2005, http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf.

high-speed Internet service.[11] Some of these concerned citizens argued that imposing common carriage or "open access" regulations would be the best way to ensure unfettered access,[12] while others argued for imposing a "network neutrality" rule, which would directly forbid phone and cable Internet providers from discriminating among content and applications.[13] Neither group believed that facilities-based competition would be sufficient to protect network neutrality because almost every American faces a duopoly or monopoly in the provision of broadband.[14] In 2002 and then 2005, the FCC rejected imposing common carriage or open access rules for cable broadband and DSL.[15] Rather, the FCC addressed the concern that cable and phone companies would restrict users' ability to access Internet applications, services, devices, or to otherwise undermine competition with a network neutrality policy statement. The same day the FCC rejected common carriage for DSL, it adopted an Internet Policy Statement setting out users' rights to access all lawful Internet content and applications, as well as their right to competition in multiple Internet markets.[16]

Just a few months after the adoption of the FCC's Policy Statement, facilities-based broadband service providers began declaring their intention to block, degrade, or otherwise

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[11] *See, e.g.*, LAWRENCE LESSIG, THE FUTURE OF IDEAS (2002); Remarks of Commissioner Michael J. Copps, Freedom to Connect 2006, April 3, 2006, http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-264765A1.pdf; Remarks of Michael K. Powell, Chairman, Federal Communications at the Silicon Flatirons Symposium, *Preserving Internet Freedom: Guiding Principles For the Industry*, February 8, 2004, http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-243556A1.pdf; Ex parte Submission of Tim Wu and Lawrence Lessig to the Declaratory Ruling & Notice of Proposed Rulemaking in Inquiry Concerning High-Speed Access to the Internet, CS Dkt. No. 02-52 (Aug. 22, 2003), available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6514683885; TimWu, *Why You Should Care About Network Neutrality*, Slate.com, May 1, 2006, http://www.slate.com/id/2140850/.

[12] *See, e.g.*, Yochai Benkler, *From Consumers to Users*, 52 Fed. Comm'ns. L. J. 561 (2000), http://www.law.indiana.edu/fclj/pubs/v52/no3/benkler1.pdf.

[13] TimWu, *Why You Should Care About Network Neutrality*, Slate.com, May 1, 2006, http://www.slate.com/id/2140850/.

[14] S. Derek Turner, *Broadband Reality Check II*, Free Press, August 2006, http://www.freepress.net/docs/bbrc2-final.pdf.

[15] *See* NCTA v. Brand X Internet Services, 545 U.S. 967 (2005); Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, 20 FCC Rec. 14853 (2005).

discriminate among providers of Internet content and applications.[17] These declarations sparked outrage among millions of Americans—including every day citizens, consumer representatives, technology developers, and Congresspersons—who organized to demand that network neutrality be preserved, by legislation or regulation.[18] One core fear was that providers would block or degrade innovative applications that compete with the providers' own services, such as cable companies degrading applications supporting Internet television that could compete with cable television. Another core fear was that broadband service providers would interfere with network neutrality unbeknownst to consumers and technologists, perhaps by secretly degrading certain services to undermine their competitiveness. A nightmare scenario would feature both practices: secretly degrading innovative, competitive applications.

The broadband service providers, primarily phone and cable companies, and their hired spokespersons claimed network neutrality advocates were being alarmist. They claimed network neutrality as "a solution in search of a problem,"[19] and that legislation was unnecessary because providers would not discriminate among applications or content. This claim was part theoretical and part empirical.

Theoretically, they claimed that cable and phone providers would have no incentive to discriminate among applications and content. Because consumers derive value from access to a

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[16] Federal Communications Commission, Policy Statement, Aug. 5, 2005, p, 3, http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf.

[17] *See* Jonathan Krim, *Executive Wants to Charge for Web Speed*, Washington Post, Dec 1, 2005, http://www.washingtonpost.com/wp-dyn/content/article/2005/11/30/AR2005113002109.html; *At SBC, It's All About "Scale and Scope,"* BusinessWeek, Nov 7, 2005, http://www.businessweek.com/magazine/content/05_45/b3958092.htm; Paul Kapustka, *Verizon Says Google, Microsoft Should Pay for Internet Apps*, InformationWeek, Jan 5, 2006, http://www.informationweek.com/news/showArticle.jhtml?articleID=175801854.

[18] *See, e.g.*, Save the Interne.com, http://www.savetheinternet.com/; Free Press, *Bad Telecom Legislation Defeated with End of 109th Congress*, Press Release, Dec. 8, 2006, http://www.freepress.net/press/release.php?id=188.

[19] *See, e.g.*, John P. Ourand, *Q&A With NCTA's Dan Brenner*, CableWorld, July 11, 2005, http://findarticles.com/p/articles/mi_m0DIZ/is_2005_July_11/ai_n14818305; *see alsoBig Lie of the Week: No.* 3, Save the Internet.com, http://www.savetheinternet.com/=lie3.

diversity of applications and content, network providers had an incentive to offer non-discriminatory services that consumers demanded. But, under conditions present in the residential broadband market, the cable and phone providers would have incentives to discriminate.[20] Most importantly, network providers may discriminate among applications to protect market power in a non-Internet service. Phone companies may block voice-over-Internet-protocol to protect their market power in voice telephony; indeed, at least one company has done so.[21] Cable companies, like Comcast, may block protocols supporting Internet television or video programming—as it has done. Even the staunchest opponents of network neutrality agree such discrimination contravenes the public interest and is anticompetitive.[22]

The empirical claim—that network neutrality is unnecessary because broadband service providers do not engage in discrimination—has remained somewhat contested, until Comcast's recent actions have ended the debate. As late as June, 2007, the cable industry lobby was maintaining that cable companies would not block access to video or peer-to-peer services:

> cable operators will not go down the path of blocking access to video or P2P services. Blocking such services would be a recipe for stagnation of the Internet and massive dissatisfaction among consumers, which would lead to loss of customers to our competitors. As noted above, NCTA has stated that its members will not block access to any lawful content, application, or service available on the public Internet.[23]

Despite these protestations, network neutrality advocates pointed out that violations of network neutrality have remained somewhat infrequent, even if alarming in particular cases,[24] because

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[20] *See* Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. Telecom. & High Tech. Law 329 (2007).

[21] Madison River Communications, LLC, Consent Decree, March 4, 2005, *available at* http://www.fcc.gov/eb/Orders/2005/DA-05-543A2.html.

[22] Christopher S. Yoo, *Promoting Broadband Through Network Diversity*, at 43, (2006), *available at* http://www.ncta.com/DocumentBinary.aspx?id=286.

[23] Comments of the NCTA, *Broadband Industry Practices*, WC Docket No. 07-52, filed June 15, 2007, at p.31.

[24] *It's Already Happening*, Save the Internet.com, http://www.savetheinternet.com/=threat#examples.

public and Congressional scrutiny has disciplined the American phone and cable companies.[25] Moreover, in consummating respective mergers, AT&T and Verizon have had to agree temporarily to abide by the FCC's Policy Statement.[26]

Because of Comcast's recent practices—which consist of precisely the most egregious network neutrality violations that concerned by "alarmist" network neutrality advocates—there now remains no doubt that the empirical threat to network neutrality is real and upon us. Because Comcast claims its actions conform to the FCC's Policy Statement, unless the FCC acts, even broadband service providers which agreed in merger agreements to follow the Policy Statement—such as Verizon and AT&T—may feel emboldened to engage in activity mirroring Comcast's.

B. Comcast Blocks Innovative Applications

For many months, tech-savvy consumers and members of the tech community had accused broadband service providers of limiting peer-to-peer applications, including BitTorrent. A peer-to-peer application exploits diverse "connectivity between participants in a network and the cumulative bandwidth of network participants rather than conventional centralized resources where a relatively low number of servers provide the core value to a service or application."[27] Peer-to-peer applications are used for sharing content files containing audio, video, data or anything in digital format, as well as realtime data, such as voice-telephone traffic. The term BitTorrent refers to both a company and a protocol. BitTorrent is an open source protocol for cheaply and quickly distributing large files. BitTorrent Inc., is a company that was later founded

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[25] Edward W. Felten, *Nuts and Bolts of Network Neutrality*, July 6, 2006, http://itpolicy.princeton.edu/pub/neutrality.pdf ("ISPs, knowing that discriminating now would make regulation seem more necessary, are on their best behavior.")

[26] Roy Mark, *AT&T Makes Network Neutrality Concessions*, Oct. 16, 2006, http://www.internetnews.com/bus-news/article.php/3638121; Marguerite Reardon, *FCC Approves AT&T-BellSouth Merger*, CNET News.com, Dec. 29, 2006, http://www.news.com/FCC-approves-ATT-BellSouth-merger/2100-1036_3-6146369.html.

by the original inventor of the BitTorrent protocol, in order to offer products and services (including licensed movie downloads) using it.

In August, a weblog dedicated to news about the BitTorrent protocol reported that some users of Comcast's broadband service "had noticed that their BitTorrent transfers were being cut off and that they experienced a significant decrease in download speeds."[28] Comcast "serves" customers in 39 states and the District of Columbia, including 12.9 million customers subscribing to what is advertised as high-speed Internet access; it is the number two provider of such service and the number one provider of cable television service.[29] Responding to these reports, Comcast flatly denied any blocking, degrading, or "filtering" any protocols. Speaking with a reporter in August, Comcast spokesman Charlie Douglas:

> flat-out denied that the company was filtering or "shaping" any traffic on its network. He said the company doesn't actively look at the applications or content that its customers download over the network. But Comcast does reserve the right to cut off service to customers who abuse the network by using too much bandwidth.[30]

The spokesperson said, however, that Comcast would cut off a customer's service (or merely "raise its eyebrows") if the customer sends "roughly 250,000 photos" or downloads "more than 30,000 songs a month." Nonetheless, he "firmly reiterated that the company doesn't filter or throttle back traffic." As the reporter noted, the issue of filtering traffic is a "hot one and goes right to the heart of the Net Neutrality debate, which has been raging for more than a year."[31]

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[27] Peer-to-Peer, Wikipedia, http://en.wikipedia.org/wiki/Peer-to-peer (visited Oct. 31, 2007).

[28] Marguerite Reardon, *Comcast Denies Monkeying with BitTorrent Traffic*, CNet News.com, August 21, 2007, http://www.news.com/8301-10784_3-9763901-7.html.

[29] Deborah Yao, *Comcast 3Q Profit Tumbles, Shares Slide,* Associated Press, Oct. 25, 2007, http://www.washingtonpost.com/wp-dyn/content/article/2007/10/25/AR2007102500599.html; Comcast, *Corporate Overview,* http://www.comcast.com/corporate/about/pressroom/corporateoverview/corporateoverview.html.

[30] Marguerite Reardon, *Comcast denies monkeying with BitTorrent traffic*, August 21, 2007, http://www.news.com/8301-10784_3-9763901-7.html.

[31] *Id.*

Comcast's denials suggested that any problems with applications using the BitTorrent protocol were the fault of the BitTorrent protocol or its clients.[32] In September, Comcast repeated these denials to the Electronic Frontier Foundation, a nonprofit that educates the public about and litigates over issues regarding free speech, privacy, innovation, and consumer rights online. Comcast "assured" the EFF that Comcast "isn't deliberately blocking, degrading, interfering with, or discriminating against particular protocols or kinds of traffic ... [and] that it isn't using network management techniques that are designed to disrupt anyone's use of BitTorrent (or any other application)."[33]

On October 19, 2007, however, the Associated Press reported that Comcast was in fact degrading several peer-to-peer applications, including BitTorrent. The Associated Press's own studies, and those of the Electronic Frontier Foundation, uncovered that Comcast has been degrading and blocking peer-to-peer applications, including those using the BitTorrent protocol.[34] Subsequent studies provided evidence that Comcast is also degrading Gnutella, and even Lotus Notes, a suite of software that many businesses use to share email, calendars and file sharing.[35] Unconfirmed reports suggest that other protocols, including the widely used FTP

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[32] *Id.*

[33] Seth Schoen, *Comcast and BitTorrent*, Electronic Frontier Foundation Blog, September 13, 2007, http://www.eff.org/deeplinks/2007/09/comcast-and-bittorrent.

[34] Peter Svensson, *Comcast Blocks Some Internet Traffic*, Associated Press, Oct. 19, 2007, http://ap.google.com/article/ALeqM5gxRiQSVfgK4sLbVRE_X4MOlM9q0AD8SCASPG0; Seth Schoen, *EFF tests agree with AP: Comcast is forging packets to interfere with user traffic*, Electronic Freedom Foundation Blog, Oct. 19, 2007, http://www.eff.org/deeplinks/2007/10/eff-tests-agree-ap-comcast-forging-packets-to-interfere.

[35] Peter Eckersley, *Comcast is also Jamming Gnutella (and Lotus Notes?)*, Electronic Freedom Foundation Blog, Oct 20, 2007, http://www.eff.org/deeplinks/2007/10/comcast-also-jamming-gnutella-and-lotus-notes; Stephen Wellman, *Comcast Is Blocking More Than BitTorrent, Including Lotus Notes*, Information Week, Oct. 22, 2007, http://www.informationweek.com/blog/main/archives/2007/10/comcast_is_bloc.html; Kevin Karnarski Blog, Oct. 22, 2007, http://kkanarski.blogspot.com/2007/09/comcast-filtering-lotus-notes-update.html.

protocol, may also have been affected.[36] The AP's tests showed that Comcast was jamming peer-to-peer traffic in a way that made it inconvenient—and extremely slow—for users:

> In one case, a BitTorrent file transfer was squelched, apparently by messages generated by Comcast, only to start 10 minutes later. Other tests were called off after around 5 minutes, while the transfers were still stifled.[37]

Comcast actions affect all Internet users—whether or not a user is a Comcast customer. Comcast has only been reported to jam connections when they are initially made *to* a Comcast customer. The consequences of this kind of jamming depend on the protocol in question. In the case of BitTorrent, the primary harm is to prevent Comcast subscribers from publishing or republishing material using BitTorrent. In the case of Gnutella, Comcast's degradation reduces or even prevents a user's ability to find other Gnutella users and either upload or download material over the network.

Caught red-handed after Comcast had "repeatedly denied blocking any Internet application, including 'peer-to-peer' file-sharing programs like BitTorrent," the senior vice president of Comcast Online Services added a "nuance," claiming it only "delayed" traffic. The vice president said, "we use several network management technologies that, when necessary, enable us to delay - not block - some peer-to-peer traffic. However, the peer-to-peer transaction will *eventually* be completed as requested."[38] EFF's staff technologist responded that, "Characterizing that as delaying traffic I think is ... a stretch. What they are doing is spoofing traffic or jamming traffic."[39] He wrote, further, that, if Comcast was honest and delaying traffic

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[36] Stephen Wellman, *Comcast Is Blocking More Than BitTorrent, Including Lotus Notes*, Information Week, Oct. 22, 2007, http://www.informationweek.com/blog/main/archives/2007/10/comcast_is_bloc.html.

[37] Peter Svensson, *Comcast Admits Delaying Some Traffic,* Associated Press, Oct 23, 2007, http://hosted.ap.org/dynamic/stories/C/COMCAST_DATA_DISCRIMINATION.

[38] *Id.* (emphasis added).

[39] *Id.*

was "Comcast's private intent, they were clearly making absurd and frequently incorrect assumptions about the protocols they were jamming."[40] Comcast's actions fit no reasonable definition of delaying:

> [C]onsider the following analogy:
>
> ... Alice telephones Bob, and hears someone answer the phone in Bob's voice. They say "I'm sorry Alice, I don't want to talk to you', and hang up. Except, it wasn't actually Bob who answered the phone, it was Comcast using a special device to impersonate Bob's voice. Comcast might describe this as 'delaying' Alice and Bob's conversation, on the theory that perhaps they'll keep calling each other until some day when Comcast isn't using their special device. They may also invoke the theory that Alice will call other people who are a lot like Bob, but aren't on Comcast's network, so her conversation will only be delayed.[41]

So Comcast's actions do not merely deliberately "delay" peer-to-peer traffic. Its tactics, in fact, are precisely those used by Internet censorship systems in China.[42] At any rate, even Comcast does not deny that its methods deliberately discriminate against peer-to-peer traffic.

Comcast maintained not just a right to degrade applications, but also to do so secretly.

C. Comcast's Methods are Deliberately Secretive

Comcast's method of "spoofing" and "jamming" applications is calculated and deliberately hidden from users. First, as the AP explained, "Comcast's computers masqueraded as those of its users to interrupt file-sharing connections."[43] Usually, when a user downloads information, the user's computer sends a request packet to the information source (here, an uploader); the information source responds by also sending packets. Analyses by the Associated

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[40] Peter Eckersley, *Comcast Needs to Come Clean*, Electronic Frontier Foundation Blog, October 25, 2007, http://www.eff.org/deeplinks/2007/10/comcast-needs-come-clean.

[41] *Id.*

[42] *See* Seth Schoen, *EFF tests agree with AP: Comcast is forging packets to interfere with user traffic*, Electronic Freedom Foundation Blog, Oct. 19, 2007, http://www.eff.org/deeplinks/2007/10/eff-tests-agree-ap-comcast-forging-packets-to-interfere.

Press, EFF, and bloggers demonstrate that, on Comcast's network, for some peer-to-peer traffic, the network operator sends an exact replica of the request packet back to *both* parties, the downloader and the uploader. This replica includes a "reset" command, which drops the entire connection between the computer users. In short, "[e]ach PC gets a message invisible to the user that looks like it comes from the other computer, telling it to stop communicating. But neither message originated from the other computer —it comes from Comcast."[44]

According to the Associated Press whose researchers attempted to download the King James Bible through BitTorrent the download "failure was due to 'reset' packets that the two computers received, carrying the return address of the other computer."[45] The AP, like the EFF, compared it to a telephone "operator breaking into the conversation, telling each talker in the voice of the other: 'Sorry, I have to hang up. Good bye.'"[46] As the EFF researcher explained, "[f]orged reset packets are normally the kind of thing that would only be present if a hacker was attacking your computer, but in this case, it's the ISP you pay money to each month that is sending them."[47]

Second, to make its tactics even less transparent, Comcast only degrades applications when a Comcast user uploads content, rather than when the Comcast user downloads content.

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[43] Peter Svensson, *Comcast Blocks Some Internet Traffic*, Associated Press, Oct. 19, 2007.

[44] *Id.*

[45] These reset packets "tell the receiving computer to stop communicating" but the AP's "traffic analyzer software running on each computer showed that neither computer actually sent the packets." Quite simply, these packets "originated somewhere in between," that is, by Comcast, "with faked return addresses." Peter Svenson, *AP tests Comcast's file-sharing filter,* Associated Press, Oct. 19, 2007, http://news.yahoo.com/s/ap/20071019/ap_on_hi_te/comcast_data_discrimination_tests.

[46] Peter Svensson, *Comcast Admits Delaying Some Traffic,* Associated Press, Oct 23, 2007.

[47] Peter Eckersley, *Comcast is also Jamming Gnutella (and Lotus Notes?)*; Stephen Wellman, *Comcast Is Blocking More Than BitTorrent, Including Lotus Notes*, Information Week, Oct. 22, 2007, http://www.informationweek.com/blog/main/archives/2007/10/comcast_is_bloc.html.

Indeed, a company selling the technology that performs these exact functions, called Sandvine,[48] touts this feature as a major selling point. Although Comcast has neither confirmed nor denied whether it uses Sandvine's product to implement these tactics,[49] the business press has reported that Comcast is a Sandvine customer.[50]

Neither Sandvine nor Comcast can deny that their low-level TCP RST forgery tactics are hidden from users. Indeed, Sandvine advertises one benefit of its product to be its secrecy, touting that "subscribers have no indication of what is happening."[51] Comcast similarly admits that its consumers have no indication of what is happening. Comcast's own spokesperson:

> compared it to making a phone call and getting a busy signal, then trying again and getting through. In cases where peer to peer file transfers are interrupted, the software automatically tries again, so the user may not even know Comcast is interfering.[52]

While it may be true that *some* software automatically tries again, there is no guarantee that this is true of the many dozens of programs that communicate using protocols that are

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[48] *See* Sandvine Inc., *Peer-to-Peer Element – Optimizing P2P Traffic in your Network*, http://www.sandvine.com/products/p2p_element.asp; Sandvine Inc., *Meeting the Challenge of Today's Evasive P2P Traffic*, Industry White Paper, September 2004, http://www.sandvine.com/general/getfile.asp?FILEID=16; Sandvine Inc., *Session Management: BitTorrent Protocol* – Managing the Impact on Subscriber Experience, December 2004, http://www.sandvine.com/general/getfile.asp?FILEID=21.

[49] "Comcast spokesman Charlie Douglas would not confirm that the company uses Sandvine equipment. 'We rarely disclose our vendors or our processes for operating our network for competitive reasons and to protect against network abuse.'"" Peter Svenson, *AP tests Comcast's file-sharing filter,* Associated Press, Oct. 19, 2007, http://news.yahoo.com/s/ap/20071019/ap_on_hi_te/comcast_data_discrimination_tests.

[50] "Sandvine already counts top U.S. cable provider Comcast Corp among its customers, Barron's said." *Easing network debate may aid Allot/Sandvine-paper,* Reuters, April 8, 2007, http://www.reuters.com/article/companyNewsAndPR/idUSN0826692320070408. Also see, Bill Alpert, *Here's How the Drama Over 'Net Neutrality Ends*, Technology Trader, Barron's Online, April 9, 2007, http://online.barrons.com/public/article/SB117580779221361422-Cca3FuJ1x90hZC2ZmNbXdHPB6bc_20070513.html.

[51] Sandvine Inc., *Meeting the Challenge of Today's Evasive P2P Traffic*, Industry White Paper, September 2004, p. 14, http://www.sandvine.com/general/getfile.asp?FILEID=16.

[52] Brad Stone, *Comcast: We're Delaying, Not Blocking, BitTorrent Traffic,* New York Times Blog: Bits, Oct. 22, 2007, http://bits.blogs.nytimes.com/2007/10/22/comcast-were-delaying-not-blocking-bittorrent-traffic/.

affected by Comcast's packet forgery.[53] Even in cases where software does automatically retry its connection attempts, and assuming that Comcast does actually cease jamming connections after a certain period, there is no guarantee that the human subscriber will have waited that long.

The full extent and methods of Comcast's discrimination remain unknown because, Comcast has repeatedly lied or failed to come clean on its actions.[54] As one representative for the tech industry commented, "What applications work, what don't, and at what speeds? Only Comcast really knows."[55] This representative, however, is probably being optimistic, as Comcast likely does *not* know. While only Comcast knows the algorithm they use to decide when to forge RST packets, it is unlikely that they ever tested the plethora of applications that are potentially broken by that algorithm.

II. Legal Arguments

Because of apparent controversy, the FCC should declare that an Internet service provider clearly violates the FCC's Internet Policy Statement when it degrades, "delays," or blocks an application or class of applications. The FCC should also declare that degrading targeted applications does not meet the Policy Statement's exception for reasonable network management. Moreover, it should declare, an Internet service provider's failure to inform users of such intentional degradation is deceptive.

A. Degrading Applications Violates the Commission's Internet Policy Statement, Which the FCC Has Vowed to Enforce

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[53] According to Wikipedia, there are over 50 programs that implement the BitTorrent protocol alone. http://en.wikipedia.org/wiki/BitTorrent_client .

[54] Cade Metz, *Comcast throttles BitTorrent users*, The Register, Aug 22, 2007, http://www.theregister.co.uk/2007/08/22/comcast_throttles_bittorrent_users/.

[55] Peter Svensson, *Comcast Admits Delaying Some Traffic,* Associated Press, Oct 23, 2007, http://hosted.ap.org/dynamic/stories/C/COMCAST_DATA_DISCRIMINATION.

In the Policy Statement, the FCC adopted four principles to "preserve and promote the open and interconnected nature of the public Internet" and "to encourage broadband deployment."[56] In the FCC Order classifying wireline broadband service, the FCC explained that it would not hesitate to enforce these principles:

> Some commenters request that we impose certain content-related requirements on wireline broadband Internet access service providers that would prohibit them from blocking or otherwise denying access to any lawful Internet content, applications, or services a consumer wishes to access. While we agree that actively interfering with consumer access to any lawful Internet information, products, or services would be inconsistent with the statutory goals of encouraging broadband deployment and preserving and promoting the open and interconnected nature of the public Internet, we do not find sufficient evidence in the record before us that such interference by facilities-based wireline broadband Internet access service providers or others is currently occurring. Nonetheless, we articulate principles recognizing the importance of consumer choice and competition in regard to accessing and using the Internet: the Internet Policy Statement that we adopt today adopts such principles. We intend to incorporate these principles into our ongoing policymaking activities. *Should we see evidence that providers of telecommunications for Internet access or IP-enabled services are violating these principles, we will not hesitate to take action to address that conduct.*[57]

Since then, during the past two years' Congressional, FCC, and public debates over network neutrality, the FCC's Chairman, an opponent of new network neutrality legislation, has repeatedly reaffirmed that the FCC will enforce the Policy Statement. For example, Chairman Martin testified to the Senate Committee with jurisdiction over the FCC, the Committee on Commerce, Science & Transportation on February 1, 2007, telling the Committee:

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[56] Federal Communications Commission, Policy Statement, Aug. 5, 2005, p, 3, http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf.

[57] *See* Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, 20 F.C.C.R. 14853, 14904 ¶ 96 (2005).

> Recently, concerns about preserving consumers' access to the content of their choice on the Internet have been voiced at the Commission and Congress. In its Internet Policy Statement, the Commission stated clearly that access to Internet content is critical and the blocking or restricting consumers' access to the content of their choice would not be tolerated. Although we are not aware of current blocking situations, the Commission remains vigilant and stands ready to step in to protect consumers' access to content on the Internet.[58]

Two months later, the Chairman reiterated this commitment in an interview with Broadcasting & Cable.[59] A frequently-cited argument against network neutrality legislation, in fact, is that the FCC can and will enforce network its Policy Statement.

Comcast is violating three of the Policy Statement's four principles. First, consumers are "entitled to run applications and use services of their choice, subject to the needs of law enforcement." Second, consumers are "entitled to access the lawful Internet content of their choice." Third, consumers "entitled to competition among network providers, application and service providers, and content providers." Comcast violates all three principles by blocking consumers' access to applications, content, and competition.

1. Violation 1: Consumers are Entitled to Run Applications and Use Services of Their Choice

While users are entitled to run applications and use services of their choice, degrading particular applications that consumers want to use blocks consumers' ability to "run applications and use services" of their choice. For example, here, consumers cannot properly run BitTorrent, Lotus Notes, FTP, and Gnutella because of Comcast's actions.[60] A network provider cannot claim that consumers can still "run" the application, only with delays and resets. First, the delays

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[58] Statement of Federal Communications Commission Chairman Kevin J. Martin before the Committee on Commerce, Science & Transportation, Feb 1, 2007, http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=1809&Witness_ID=1951.

[59] John Eggerton, *FCC's Kevin Martin on the Hot Seat*, Broadcasting & Cable, April 9, 2007, http://www.broadcastingcable.com/article/CA6431598.html

and resets are not part of the "application" that the user seeks to run. Indeed, the user does not (and would not) choose these delays and rests. Second, if intentionally "delaying"[61] an application conformed to the Policy Statement, the Policy Statement would mean nothing. A network provider could "delay" applications until the year 2009, or 3009, without violating this principle of the Policy Statement.

Some have hinted that network providers should be able to block certain applications, like BitTorrent, because those applications foster copyright infringement. But this is silly. Comcast is not just blocking illegal activity, and these applications, particularly BitTorrent, have many valuable, legal uses.

First, the FTP protocol, which is one of the Internet's oldest protocols for sharing information, is clearly lawful. Second, Lotus Notes, which provides telecommuters and businesses with email, calendar, and file-sharing services, is also clearly lawful. An information technology blog declared that, by blocking Lotus Notes, a network provider is "taking on small and midsize businesses" engaging in clearly legal activities.[62]

BitTorrent. BitTorrent is a content-neutral mechanism for downloading files efficiently. It has attracted some media attention on account of the fact that some people use BitTorrent for illegal purposes (such as those violating copyright), but the same observation would be true of the World Wide Web. Consumers use BitTorrent for a wide range of valuable and legal uses..[63] Hollywood studios – perhaps the most avowed skeptics of P2P technology – have begun

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[60] The FCC's specified an exception to this principle, "for the needs of law enforcement," do not apply here, and Comcast has not claimed that the law-enforcement exception applies.

[61] Again, Comcast's actions do not consist of mere "delay."

[62] Naomi Grossman, *Comcast Hates Teens and Small and Midsize Businesses*, bMighty.com, Oct 23, 2007, http://www.bmighty.com/blog/main/archives/2007/10/comcast_hates_t.html.

licensing their movies for download using BitTorrent.[64] BitTorrent has so many legal uses because BitTorrent benefits content consumers with quick downloads of large files and benefits content providers with cheap distribution. It is emerging as the future of online video, including television- and HD-quality video,[65] and the distribution of high quality music.[66] BitTorrent is used to transmit such content in downloads, streamed media, or podcasts.[67] Recent articles in the Wall Street Journal[68] and Forbes[69] have highlighted this newfound success of BitTorrent in the video realm and Wall Street has taken an interest.[70]

BitTorrent enables content consumers to quickly download large files. Cable and phone companies provide "high-speed" Internet service that permits users to download content at far higher speeds than users can upload content. So, ordinarily, when one user downloads information from another user, as with peer-to-peer applications, the download cannot go faster than the uploader's slower upload speed. For example, though the downloader might be able to receive content at 6 Mbps, the upload is providing the content at 200 Kbps. BitTorrent, however, enables the downloader to download pieces of a larger file from many different users

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[63] The Gnutella protocol is similarly used for legal activity, as well as, by some people, for activity that may infringe copyright.

[64] See http://www.bittorrent.com/about/partners.

[65] *See, e.g.,*: *Now Playing*, BitTorrent, http://www.bittorrent.com/nowplaying; *Featured Customers*, Bright Cove, http://www.brightcove.com/customers/index.cfm; Vuze, *About Azureus*, http://www.vuze.com/About.html.

[66] *See, e.g.*, *SubPopRecords*, BitTorrent, http://www.bittorrent.com/users/subpoprecords.

[67] For streaming, see *Streaming Delivery Services*, BitTorrent DNA, http://www.bittorrent.com/dna/streamingservices.html. For podcasting BitTorrent clients, see *Overview*, Juice, http://juicereceiver.sourceforge.net/overview/index.php; *Broadcast Machine*, Miro, http://www.getmiro.com/create/broadcast/.

[68] Peter Grant, *Companies Try New Ways to Boost Web Video Quality*, Wall St. J., Oct 9, 2007, http://online.wsj.com/article/SB119189097794952908.html.

[69] Andy Greenberg, *Brightcove Unleashes A BitTorrent Stream*, Forbes, Oct 9, 2007, http://www.forbes.com/home/technology/2007/10/08/brightcove-fox-paramount-tech-cx_ag_1009bittorrent.html.

[70] Paul R. La Monica, *Is BitTorrent the NextBbig IPO?*, CNNMoney.com, March 28, 2007, http://money.cnn.com/2007/03/28/commentary/mediabiz/index.htm.

simultaneously.[71] This process permits several users to max out their slow upload speeds in providing pieces of a file, and at the same time permit the downloader to use its full download speed in downloading from several uploaders.[72] Once a user begins downloading, that user also becomes a distributor of the content.

For content-providers, the BitTorrent protocol is an inexpensive way to distribute content. The standard, more costly, method of distributing content is to rely on central servers, which distribute content to each user. In the central-server model, all the strain of the download process is placed on a single source. The content creator must bear the entire costs of hardware, hosting and bandwidth to host the content. For example, if an individual creates an hour-long movie and is seeking to distribute it to anyone willing to watch it, they would need to pay a hosting company to store the movie, and then pay for the upload bandwidth so that others can download the movie. BitTorrent creates efficiencies that allow the content provider to pay significantly less. His downloaders also become his distributors, as consumers can download

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[71] *See* Rys Boyd-Farrell, Comment, *Legal Analysis Of The Implications Of MGM v. Grokster For Bittorrent*, 11 Intell. Prop. L. Bull. 77, 78-79 (2006): "[T]he program is not used to search for files to download because the program requires the use of a separate file, referred to as a 'tracker,' in order to locate the desired file to download. A tracker is an extremely small file that contains the addresses of servers that indicate people, called 'seeders,' who have pieces of the file or the complete file available for download. A tracker serves simply as a signpost, directing people through the internet to computers that are offering the file, and contains nothing of the actual file within it. In order to get a tracker, people usually go to 'torrent websites,' which are websites whose primary purpose is to enable users to upload and download trackers. Torrent websites are where seeders have uploaded trackers for files they wish to offer for downloading. A person can try to find a tracker for a specific file or browse all of the trackers available. These websites are not affiliated with the official BitTorrent website created by Cohen or with one another."

[72] *See id.* at 78: "Typical plans from internet service providers ('ISP') strictly limit the speed at which files can be uploaded. The consequence of the ISP limitations is that an internet user may be capable of downloading at a very fast speed but is not able to utilize that full potential because he is downloading from a single person with a limited upload speed. BitTorrent helps eliminate this problem by breaking the file into a multitude of small pieces that can be downloaded separately from many different people at the same time. ... The limited upload speeds of multiple people are aggregated in order to utilize the full potential of an individual's download speed. This impediment on customers becoming content creators is also limited by the use of dynamic IP addresses. Both these issues are discussed in the comments of Consumers Union, Consumer Federation of America and Free Press. In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, GN Docket No. 07-45, May 16, 2006.

from other consumers. Indeed, the more popular the movie becomes, the more users will possess it to make it available, and so the faster it will download to new users.

Legal Video Programming. Content providers rely heavily on BitTorrent for distributing video such as movies and shows. Of course, because BitTorrent helps content-providers distribute movies and shows, these applications may compete with Comcast's traditional cable television offerings. First, one service called Vuze uses BitTorrent to distribute high-quality and high-definition video content.[73] Vuze has garnered 10 million users[74] and inked agreements with several content-providers, including Showtime, BBC, A&E, the History Channel, the Biography Channel, National Geographic, and Starz.[75] In fact, G4 TV, which is owned by Comcast itself, also has an agreement with Vuze.[76]

Second, while BitTorrent is a widely licensed protocol, the protocol's developer has a company named BitTorrent, which has forged agreements to distribute video with 20th Century Fox, G4 TV, Lionsgate, Palm Pictures, Paramount, Starz Media, MTV Networks (including Comedy Central, MTV, MTV2, Nickelodeon, Nicktoons Network, SpikeTV, The N, TV Land and VH1),[77] and the CW.[78]

Third, an innovative new company named Brightcove offers streaming of broadcast-quality content through the BitTorrent protocol. Brightcove is the first client of BitTorrent DNA,

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[73] *See* Cyril Roger, *High Definition Movies and Downloads to Your PC*, Softonic, http://azureus-zudeo.en.softonic.com/.

[74] *Vuze Passes an Installed Base Milestone of 10 Million Viewers and Opens Its Internet Publishing Platform to Networks, Studios, and Content Creators*, Business Wire, Oct 9, 2007, http://money.aol.com/news/articles/_a/vuzetm-passes-an-installed-base/n20071009002209990022.

[75] See *About Azureus*, Vuze, http://www.vuze.com/About.html

[76] *Id. See also* G4, *About-Ownership*, http://www.g4tv.com/g4/about/ownership/index.html

[77] BitTorrent, *BitTorrent Strikes Digital Download Deals*, Press Release, Nov. 29, 2006, http://www.bittorrent.com/about/press/bittorrent-strikes-digital-download-deals-with-20th-century-fox-g4-kadokawa-lionsgate-mtv-networks-palm-pictures-paramount-and-starz-media.

a new service that allows for the utilization of the BitTorrent protocol when streaming audio or video.[79] Brightcove's customers include CBS Corporation, BET, the Discovery Channel, General Motors, MTV Networks, New York Times, Time, Reuters, the Washington Post, Sky, Warner Music Group, and Sony BMG Music Entertainment, and About.com.[80]

Beyond these services, BitTorrent is used to distribute Internet-only content. Peter Jackson's *King Kong* website used BitTorrent to distribute development movies they released semi-weekly in creating that film.[81]

Legal Music. BitTorrent is widely used to download music legally.[82] For example, users can download from bands such as Iron & Wine and The Postal Service from Sub Pop Records[83] or from the band Ween from Brown Tracker.[84]

Legal Software Distribution and Development. Developers use BitTorrent to distribute diverse software applications. Many open source applications are distributed through BitTorrent, including Linux Operating systems and patches,[85] Open Office, NetBSD, Fedora, Mandriva, Ubuntu, CentOS,[86] and Sun Microsystems' Open Solaris. Similarly, gaming software relies on BitTorrent for distribution, including for games such as Valve Software's Steam,[87] World of

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[78] Ben Fritz, *WB Sails with Tech Pirate: Warner Bros. Partners with Bit-Torrent*, Daily Variety, May, 2006, http://findarticles.com/p/articles/mi_hb5143/is_200605/ai_n18585829; BitTorrent, *The CW*, http://www.bittorrent.com/users/the-cw.

[79] *See BitTorrent's Delivery Network Accelerator (DNA) Service Improves the Online Experience for Streaming Video, Downloadable Software and Video Games*, Press Release, Oct. 9, 2007, http://www.streamingmedia.com/press/view.asp?id=7645.

[80] *See Featured Customers*, Bright Cover, http://www.brightcove.com/customers/index.cfm.

[81] *See Production Diary*, Kong is King, http://www.kongisking.net/torrents/.

[82] *See How to Download Free, Legal, High Quality Music*, Of Zen and Computing, http://www.ofzenandcomputing.com/zanswers/420.

[83] *See SubPopRecords*, BitTorrent, http://www.bittorrent.com/users/subpoprecords.

[84] *Recent News*, Brown Tracker, http://browntracker.net/.

[85] *Linux BitTorrents*, Linux Tracker, http://linuxtracker.org; *Get openSUSE Distribution*, openSUSE, http://software.opensuse.org/.

[86] *See OpenOffice.org P2P Downloads*, OpenOffice, http://distribution.openoffice.org/p2p/index.html.

[87] *See Peer-to-Peer Files Released*, The Steam Review, Aug. 19, 2007, http://steamreview.org/posts/p2pfiles/.

Warcraft and its updates (which has over 2 million North American subscribers and 9 million worldwide),[88] and Gunz: The Duel.[89]

Software developers also use BitTorrent. For example, Amazon.com offers Simple Storage Service, which provides unlimited data storage for software developers ranging from Microsoft to SmugMug. This Service employs BitTorrent "to lower costs for high-scale distribution."[90]

Where a network provider blocks access to the BitTorrent protocol, it cripples these highly valuable, and lawful, applications. The FCC should declare that the Policy Statement forbids providers from doing so.

2. Violation 2: Consumers are Entitled to Access the Lawful Internet Content of their Choice

Degrading an application prohibits Internet users from accessing "the lawful Internet content of their choice." Simply, if a user seeks to access certain content—such as a film available on a BitTorrent client—that user is impeded in accessing that content by Comcast.

Network providers cannot block users' attempts to upload content, as blocking uploads denies other users the ability to access that content. On BitTorrent, when one user is uploading content, another user is attempting to download (or "access") the content. If a network provider blocks uploads, others cannot access the content. For example, here, if the only users who have a certain file are Comcast customers, then downloaders cannot access that file.[91] This situation is more likely for users' original content, so blocking uploads burdens original content more than

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[88] *See World Of Warcraft Surpasses 8 Million Subscribers Worldwide*, Press Release, Jan. 11, 2007, http://www.blizzard.com/press/070111.shtml; *World Of Warcraft Surpasses 9 Million Subscribers Worldwide*, Press Release, July 24, 2007, http://www.blizzard.com/press/070724.shtml.

[89] *See Download GunZ: The Duel*, GunzFactor, http://www.gunzfactor.com/downloadgunz.php.

[90] *See* Amazon Simple Storage Service, http://www.amazon.com/gp/browse.html?node=16427261.

(perhaps "pirated") Hollywood movies. Blocking uploads also burdens the uploader's access to content; for example, BitTorrent users who upload less content—such as those whose connections terminate when they begin to upload—may be terminated by BitTorrent clients requiring users to share content.

The FCC should declare that intentionally degrading an application, especially a peer-to-peer application violates the principle of the Policy Statement guaranteeing consumer access to lawful content.

[91] There is apparently a narrow exception: if the downloader resides in the same local network community as one of the uploaders, the transaction may go through.

3. Violation 3: Consumers are Entitled to Competition among Network Providers, Application and Service Providers, and Content Providers

When a network provider degrades particular applications, it contravenes the FCC's Policy Statement by undermining competition among application and service providers, among content providers, and among network providers.

First, degrading applications undermines competition among application and service providers. Historically, the Internet permitted all service and content providers the ability to compete without seeking a permission slip from Comcast, Verizon, AT&T, or any other network provider.[92] Degrading certain applications undermines competition in applications. A network provider need not block competing applications to undermine the applications' ability to compete. All a provider needs to do is render those applications sufficiently unreliable that people stop trying to use them.[93] Users will be frustrated by the delays and terminations and use other applications. As a result, the network provider would be hand-selecting which service and applications providers can provide their services and applications, and which providers are sabotaged and unable to compete.

Second, degrading applications deprives users of competition among content-providers. Degrading applications thwarts competition among Internet content. For example, degrading peer-to-peer protocols burdens providers of large files, as distributing large files would be far more expensive for providers and far more time-consuming for consumers. Degrading applications also thwarts competition between Internet and non-Internet content. A network provider has the incentive to stifle competition with its own services. For example a network

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[92] LAWRENCE LESSIG, THE FUTURE OF IDEAS (2002).

provider offering a television service (now both cable and phone companies) or offering phone service (now also both phone and cable companies) have incentives to discriminate against providers of Internet video programming or telephony. For example, here, Comcast has an incentive to discriminate against Bright Cove and other BitTorrent clients providing high-quality video programming (as well as those providing Internet telephone service). The FCC should ensure that network providers cannot undermine competition by such content providers.

Third, secretly degrading an application undermines competition among network providers. Clandestine discrimination makes competition—to the extent it exists—less effective, as costumers who do not notice that applications are being delayed or blocked do not have enough information to consider switching to a competing provider that does not delay or block the application in question.[94]

4. These Violations Will Not Spur Broadband Deployment or Uptake

Permitting network providers to degrade applications will not "encourage broadband deployment." The United States has fallen behind much of the world in terms of Internet penetration, speed, and value. The nation is ranked 15th—not first—in broadband penetration among OECD nations.[95] As for speeds and value, in Japan, consumers can purchase connections that provide 100 megabits per second of download *and* upload speed for $50 a month. In the U.S., a 100 megabit download connection is unheard of. For $50, American users can receive 1/20 the download speed and 1/100 the upload speed. The nation's broadband problem places

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[93] For a more detailed discussion, Harold Feld, *Look! My Solution Found A Problem! Comcast Degrades BitTorrent Traffic Without Telling Users*, WetMachine, Oct. 27, 2007, http://www.wetmachine.com/item/912 (discussing Microsoft's tactics).

[94] Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. Telecom. & High Tech. Law 329, 376-377 (2007).

the nation at a severe disadvantage in competing with economies supported by widely available, cheap, faster Internet connections.[96]

We have argued in other FCC filings that the United States's dismal position in the world is a result of the FCC's failure. The FCC has failed effectively to implement Congress's directive in the 1996 Telecommunications Act to foster developments of two-way symmetrical communications networks.[97] The FCC has failed to foster competition in broadband markets now dominated by a telephone-cable duopoly.[98]

Permitting network providers to block innovative and popular applications will do nothing to promote the uptake or speeds of high-speed Internet services. First, uptake will not increase. Citizens value the Internet for the applications and content on the Internet. The most popular applications are generally those that consumers most value. Understandably, consumers often choose high-speed Internet access because they want to download large files; otherwise, dial-up Internet access would suffice. If network providers block applications, particularly those that consumers most value, then consumers will be less likely to adopt, or retain, broadband connections. Second, speeds will not increase. Network providers could increase speeds by increasing the bandwidth available on the network.[99] To increase speeds, network providers could invest in upgrading networks to carry all traffic at higher speeds. Or network providers

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[95] *See Communications, Broadband and Competitiveness: How Does the U.S. Measure Up?*: Hearing before the United States Senate Committee on Commerce, Science and Transportation, 110th Cong., Testimony of Ben Scott, Free Press, April 24, 2007, *available at* http://www.freepress.net/docs/42407bssentestimony.pdf.

[96] *See id.*

[97] *See, e.g.*, § 706(b) of the Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996) (1996 Act), reproduced in the notes under 47 U.S.C. § 157; Comments of Consumers Union, Consumer Federation of America, and Free Press, Inquiry Concerning the Deployment of Advanced Telecommunications Capability, GN Docket No. 07-45, filed May 16, 2006.

[98] *See, e.g., id.*

[99] Net Neutrality: Hearing before the United States Senate Committee on Commerce, Science and Transportation, 109th Cong. (2005), Testimony of Gary R. Bachula, Internet2, February 7, 2006, *available at* http://commerce.senate.gov/pdf/bachula-020706.pdf.

could block or degrade applications to avoid a general upgrade of its systems. At the same time, providers could attempt to charge applications providers *not* to block or degrade their services. Even if the network becomes more and more congested, the provider need not upgrade its network. It could simply raise its prices to unblock applications, as access to the network become scarcer. So perversely, the network provider would have an incentive to suppress bandwidth availability, and thereby reduce speeds, since it can charge both the customer and a third party for the equivalent of a bandwidth upgrade.[100]

These deceptive tactics are evidence of the lack of competition in the high-speed Internet market where instead of investing in the network, a company can reduce the online services available to customers choosing the short-term cost savings over the long term benefits to broadband uptake and thereby the overall economy.[101]

B. Secretly Degrading an Application is not Reasonable Network Management

In a footnote in its Policy Statement, the Commission specified that the Statement's four principles "are subject to reasonable network management."[102] Comcast and its representatives have apparently suggested that degrading peer-to-peer traffic is reasonable network management.[103] Comcast has claimed that it targets high-bandwidth users out of its obligation to "all" of its customers:

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[100] *See* Harold Feld, *An Examination of the Economics of Whitacre Tiering*, WetMachine, March 27, 2006 http://www.wetmachine.com/totsf/item/441.

[101] A 2007 study by researchers at the Brookings Institution and MIT estimated that a one-digit increase in the U.S.'s per capita broadband penetration (the metric used by the OECD) equates to an additional 300,000 jobs. Robert Crandall, William Lehr and Robert Litan, *The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data*, June 2007, http://www.brookings.edu/views/papers/crandall/200706litan.htm.

[102] Federal Communications Commission, Policy Statement, Aug. 5, 2005, p, 3, n. 15, http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf..

[103] Peter Svensson, *Comcast Admits Delaying Some Traffic*, Associated Press, Oct 23, 2007, http://hosted.ap.org/dynamic/stories/C/COMCAST_DATA_DISCRIMINATION (referring to "network

> "We have a responsibility to manage our network to ensure all our customers have the best broadband experience possible," [Comcast's spokesman] said. "This means we use the latest technologies to manage our network to provide a quality experience for all Comcast subscribers."[104]

To resolve current and future controversies, the FCC should declare that degrading particular applications or forging packets so that they appear to have come from parties other than the ISP that created them is never "reasonable network management." Rather, it is precisely and obviously what the Policy Statement forbids. Indeed, if Comcast had believed that degrading an application constituted reasonable network management, it would not have repeatedly denied what it was doing or used such secretive means.

Degrading an application cannot be considered reasonable network management. If it could, then China's extensive blocking technologies constitute reasonable network management. The FCC's Policy Statement would mean nothing. The Statement's language and context make abundantly clear that the Statement meant squarely to ensure network providers did *not* discriminate against specific applications.[105] For example, one of the Commissioners released a separate statement with the Policy Statement explaining why he voted for the Statement: "we must state clearly that innovators, technology companies, and consumers will not face unfair

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management technologies."); Scott Cleland, Comcast is within FCC's net neutrality policy that allows for "reasonable network management", Oct. 19, 2007, http://www.precursorblog.com/node/559.

[104] Peter Svensson, *Comcast Blocks Some Internet Traffic*, Associated Press, Oct. 19, 2007, http://ap.google.com/article/ALeqM5gxRiQSVfgK4sLbVRE_X4MOlM9q0AD8SCASPG0.

[105] *See, e.g.*, *FCC Adopts a Policy Statement Regarding Network Neutrality*, Techlaw Journal, http://www.techlawjournal.com/topstories/2005/20050805.asp (listing reactions to the Policy Statement reflecting the accepted understanding of its purpose). *See also* Remarks of Michael K. Powell, Chairman, Federal Communications at the Silicon Flatirons Symposium, *Preserving Internet Freedom: Guiding Principles For the Industry*, February 8, 2004, http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-243556A1.pdf.

discrimination on the Internet by network providers."[106] He stated further that the Policy Statement:

> lays out a path forward under which the Commission will protect network neutrality so that the Internet remains a vibrant, open place where new technologies, business innovation and competition can flourish. We need a watchful eye to ensure that network providers do not become Internet gatekeepers, with the ability to dictate who can use the Internet and for what purpose. Consumers do not want to be told that they cannot use their DSL line *for VoIP, for streaming video*, to access a particular news website, or to play on a particular company's game machine.[107]

The Chairman, in his statement, similarly discussed his belief "that consumers should be able to use their broadband Internet access service to access any content on the Internet."[108]

Comcast's other arguments here, which other network providers may raise, are similarly flawed. First, interfering with specific peer-to-peer applications does not become reasonable merely because peer-to-peer applications comprise much of a network provider's traffic. In fact, an application's popularity may make less reasonable to bock. More importantly, if Comcast is concerned that the collective set of users running P2P applications are affecting quality of service for other users on a cable loop, they could readily set dynamic quotas for each user on the loop, so as to ensure that there is always bandwidth available for users who are not running P2P applications – and they could do so without interfering in protocol choice. Or they could also charge by usage, provide more bandwidth to all users, or actually offer high *symmetric* broadband speeds.[109] Second, degrading specific applications is not tailored to targeting high-

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[106] Statement of Commissioner Michael Copps Concurring, Aug. 5, 2005, at 1 (emphasis added), http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-260433A4.pdf.

[107] *Id.* at 2 (emphasis added).

[108] Statement of Chairman Kevin Martin, Aug. 5, 2005, at 1, http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A2.pdf.

[109] Consumers Union, Consumer Federation of America and Free Press. In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely

bandwidth users. Comcast does not just block those sending roughly 250,000 photos or downloading "more than 30,000 songs a month"; it blocks access to download just one file, even one as small as the King James Bible, if the download is over a peer-to-peer network. As one report noted, "It's clear that Comcast is actively interfering with peer-to-peer networks even if relatively small files are being transferred."[110] Third, a network provider is not attempting, in Comcast's words, to "provide a quality experience for *all* [its] subscribers." Rather, it is specifically degrading the experience of at least some subscribers. Indeed, degrading BitTorrent may *increase* network congestion on the Internet as a whole because, as online video becomes more popular, users could have to use protocols that are less efficient than BitTorrent, leading to more congestion and inferior perfomance. Comcast's actions also could increase the congestion on other networks; the other networks' users would have to do much of the uploading that Comcast's users would have performed.

Finally, no economic argument supports the notion that degrading applications is reasonable network management. The most sophisticated economic argument has been advanced by Chris Yoo,[111] a law professor at the University of Pennsylvania who writes white papers for the cable industry lobby.[112] Yoo argues that blocking an application is the best real-world solution because high transaction costs foreclose the best theoretical solution. Under the theoretical solution, network providers would most efficiently manage their networks not by

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Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, GN Docket No. 07-45, May 16, 2006.

[110] Peter Svensson, *Comcast Admits Delaying Some Traffic,* Associated Press, Oct 23, 2007, http://hosted.ap.org/dynamic/stories/C/COMCAST_DATA_DISCRIMINATION.; Declan McCullagh, *Comcast Really Does Block BitTorrent Traffic After All,* CNet News.com, Oct. 19, 2007, http://www.news.com/living-with-the-iphone/8300-13578_3-38-0.html.

[111] *See* Christopher S. Yoo, *Promoting Broadband Through Network Diversity*, at 43, (2006), *available at* http://www.ncta.com/DocumentBinary.aspx?id=286.

[112] *See Cable Lobby's Net Neutrality White Paper*, Center for Digital Democracy, http://www.democraticmedia.org/current_projects/net_neutrality/nn_white_paper

blocking applications, but by charging users for the users' bandwidth use. If users must pay for the bandwidth they use, then the users will better internalize the costs and benefits of their use. If the users do not pay per-bandwidth of use, then the users have no incentive to conserve their bandwidth. Professor Yoo speculates, however, that the transaction costs associated with metered usage are high. As a result, cable and phone companies could avoid these transaction costs and still reduce network congestion by using proxies for heavy use of bandwidth; these proxies would be particular applications, which the network operators would block or extort.[113]

Yoo's argument is wrong, as demonstrated most forcefully by scholars at Stanford and Loyola law schools.[114] First, use of BitTorrent (or another peer-to-peer protocol) is an inaccurate proxy for heavy use of bandwidth. For example, many BitTorrent users make few BitTorrent downloads. And BitTorrent may use considerable bandwidth on a network simply because consumers particularly value the protocol. Second, no evidence suggests that network providers Yoo's "theoretical" ideal of metering usage is subject to high transaction costs. Yoo points to no evidence. Indeed, in many nations, network providers do meter, and bill their customers on the basis of amount used.[115] So the transaction costs of doing so must not be prohibitively high. Indeed, a network provider can apparently meter cheaply because, in most networks, users' traffic to and from the Internet passes through a single gateway, the network access server.[116] Third, it does not matter, from a social perspective, if network operators' executives could make

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[113] *See* Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 Geo. L.J. 1847 (2006)

[114] *See* Brett M. Frischmann & Barbara van Schewick, *Network Neutrality and the Economics of an Information Superhighway: A Reply to Professor Yoo*, 47 Jurimetrics __ (2007), *available at* http://ssrn.com/abstract=1014691. *See also* Bill D. Herman, *Opening Bottlenecks: On Behalf of Mandated Network Neutrality*, 59 Fed. Comm'ns L. J. 107 (2006), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=902071.

[115] See for instance, Broadband Choice, http://bc.whirlpool.net.au/, which provides a tool to compare plans offered by Australian broadband ISPs, including whether they meter usage, and whether they respond by charging a per-gigabyte fee or by shaping traffic once a subscriber has used up their initial quota. *See also* Frischmann & van Schewick, *Network Neutrality*, at 12 (discussing German network providers).

a little extra money using BitTorrent blocking as a proxy—just as it does not matter if they could make more money by insider trading or violating trade sanctions. What matters is whether citizens can exercise their right to access the lawful content and applications of their choice and whether the public interest is served by permitting Comcast and other network providers to degrade innovative new applications and undermine competition. In its Internet Policy Statement and elsewhere, the FCC has answered these questions; the public interest is served by Internet freedom.

C. Secretly Degrading Applications Constitutes a Deceptive Practice

The FCC should declare that network providers engage in deceptive practices when they secretly degrade particular applications. The Commission has ancillary jurisdiction under Title I of the Communications Act "to impose additional regulations to protect consumers from fraudulent and deceptive practices associated with the provision of interstate information services."[117]

Secretly degrading particular applications is deceptive in several ways. First, network providers, like Comcast, advertises access to the "Internet."[118] The Internet includes access to peer-to-peer file-sharing applications. The Commission should declare that companies cannot offer "Internet" service if they block or degrade applications. Second, network providers advertise Internet connections available for downloading and sharing large media files. Indeed, Comcast's spokesperson recently stated that "[m]ore than 99.99 percent of our customers use the residential high-speed Internet service as intended, *which includes downloading and sharing*

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[116] Frischmann & van Schewick, *Network Neutrality*, at 12.

[117] Policies and Rules Implementing the Telephone Disclosure and Dispute Resolution Act, 9 FCC Rcd. 6891, ¶16 (1994) (citing Computer and Communications Industry Ass'n v. FCC, 693 F.2d 198 (D.C.Cir.1982)).

[118] *See* Comcast, http://www.comcast.com.

video, photos and other rich media."[119] Here, of course, Comcast never told anyone that it was deliberately degrading peer-to-peer applications—not its consumers, the press, or the FCC—and issued repeated denials.

Third, degrading applications misleads the public about the value and service of the degraded applications. Consider Comcast, by denying its role in delaying and terminating peer-to-peer transactions, Comcast was suggesting that the applications were to blame for their faults.

Fourth, secretly degrading applications undermines consumers' faith in Internet products. Consumers will have no idea who or what the network provider is secretly degrading, and therefore not know what product the consumers are paying for.

D. Comcast's Actions Should be Subject to Preliminary and Permanent Injunction and Significant Forfeitures to Deter Similar Conduct by Comcast or Another Network Provider

The FCC should declare that degrading or blocking targeted applications is subject to preliminary injunction, permanent injunction, and significant forfeitures sufficient to deter clandestine activity. An injunction is necessary because harm is irreparable.[120] First, it is impossible to predict the damages required to compensate for the innovation loss of degrading applications.[121] Second, network providers would lack the funds to fully compensate for this loss, which would equal billions of dollars.[122] Third, blocking applications burdens free speech rights, so the harm is irreparable.[123] Damages are necessary because society should be made

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[119] Marguerite Reardon, *Comcast denies monkeying with BitTorrent traffic*, August 21, 2007, http://www.news.com/8301-10784_3-9763901-7.html (emphasis added).

[120] Richard R.W. Brooks & Warren F. Schwartz, *Legal Uncertainty, Economic Efficiency, and the Preliminary Injunction Doctrine*, 58 Stan. L. Rev. 381, 389 (2005).

[121] *See, e.g.*, Douglas Lichtman, *Irreparable Benefits*, 116 Yale L.J. 1284, 1292 (2007) (collecting cases). *See also* Douglas Lichtman, *Uncertainty and the Standard for Preliminary Relief*, 70 U. Chi. L. Rev. 197, 200-02 (2003) (arguing that valuation difficulties are the main reason why courts authorize preliminary relief).

[122] *See* Lichtman, *Irreparable Benefits*, 116 Yale L.J. at 1292.

[123] Elrod v. Burns, 427 U.S. 347, 373 (1976) ("[L]oss of First Amendment freedoms, for even minimal periods of time, unquestionably constitutes irreparable injury."). *Cf.* Denver Area Educational Telecommunications

"whole," to the extent possible, through compensation for its loss. Forfeitures should be high because the loss is high and because the costs of detecting and deterring clandestine blocking are high.

III. Conclusion

The Commission should declare that Internet service providers cannot intentionally degrade any applications, and that such discrimination is not reasonable network management. It should also declare that misleading the public about such discrimination is deceptive.

Respectfully Submitted,

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Consortium, Inc. v. F.C.C., 518 U.S. 727, 773 (1996) (Stevens, dissenting and concurring) (noting that a provision would "inject federally authorized private censors [such as, here, network providers] into fora from which they might otherwise be excluded, and it would therefore limit local fora that might otherwise be open to all constitutionally protected speech.").